# IBM 240 GB, 480 GB, and 960 GB SATA 2.5-inch and 3.5-inch MLC Entry SSDs are engineered for increased performance and improved workload flexibility

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## At a glance

### IBM® 240 GB, 480 GB, and 960 GB Entry SSDs

IBM 240 GB, 480 GB, and 960 GB SATA MLC Entry SSDs are new solid-state drives for System x® that are designed to deliver very fast and consistent performance to read-heavy workload demands at the best cost efficiency of any data-center-class SSD.

Benefits include:

- 2.5-inch standard form factor in 240 GB, 480 GB, and 960 GB densities.
- Efficient 3-bit MLC flash memory technology with fast sustained 4K random read performance of up to 87,000 IOPS.
- High-performance sequential throughput of 530 MBps read and 410 MBps write.
- Designed to deliver high performance and low latency to read-intensive, high-density data center workload requirements in a low-cost solid-state drive.
- Enterprise features for power-loss data protection and end-to-end data path protection.

### Warranty

One-year limited warranty or assumed system warranty on all SSDs.

## Overview

IBM 240 GB, 480 GB, 960 GB SATA MLC Entry SSDs are new solid-state drives for System x that are designed to deliver very fast and consistent performance to read-heavy workload demands at the best cost-efficiency of any data-center-class SSD.

The new entry data-center-class SSDs for System x are available as 2.5-inch and 3.5-inch standard form factor (SFF) in the 240 GB, 480 GB, or 960 GB densities, each delivering high sequential throughput of 530 MBps read and 410 MBps write. The SSDs are built with a 3-bit MLC NAND and advanced controller technology in a very cost-efficient design that drives a low-storage TCO with a high-performance-based ROI.

Fast, sustained random read performance of up to 87,000 IOPS and sustained random write of 15,000 IOPS make the IBM 240 GB, 480 GB, 960 GB SATA MLC Entry SSDs an optimal solid-state solutions for Hyperscale, cloud, and big data read-intensive workloads.

IBM 240 GB, 480 GB, 960 GB SATA MLC Entry SSDs are covered under IBM warranty. These drives carry a 1-year limited warranty, or when installed in a System x server these drives assume the system's base warranty. Solid-state devices do have finite write or program/erase (P/E) cycles and are listed as Total Bytes Written (TBW). Refer to Limitations section and the device specifications for details.

Features and functions of the IBM 240 GB, 480 GB, and 960 GB SATA MLC Entry SSDs:

- 240 GB, 480 GB, and 960 GB densities in a 2.5-inch and 3.5-inch standard form factor.
- Efficient 3-bit MLC flash memory technology with a fast sustained 4K random read performance of up to 87,000 IOPS.
- High-performance sequential throughput of 530 MBps read and 410 MBps write.
- Designed to deliver high performance and low latency to read-intensive, high-density data center workload requirements in a low-cost solid-state drive.
- Enterprise features include power-loss data protection and end-to-end data path protection.

### Warranty

IBM 240 GB, 480 GB, and 960 GB SATA 2.5-inch and 3.5-inch MLC Entry SSDs offer a 1-year limited warranty[1].

Solid-state memory cells have an intrinsic, finite number of program/erase cycles that each cell can incur. As a result, solid-state storage has a maximum amount of program/erase cycles to which it can be subjected. IBM's warranty for the solid-state storage is limited to devices that have not reached the maximum guaranteed number of program/erase cycles, as documented in the Official Published Specifications for the product. A drive that reaches this limit may fail to operate according to its specifications. Refer to the Limitations section and the device specifications for details.

[1] For information on the IBM Statement of Limited Warranty, visit

http://www.ibm.com/servers/support/machine_warranties/

Alternatively, this information is available through your IBM representative or reseller. Copies are available upon request. With respect to on-site service, IBM sends a technician after attempting to diagnose and resolve the problem remotely.

## Feature exchange

None

## Key prerequisites

IBM System x or BladeCenter® system with SATA or SAS capability depending on drives selected.

## Planned availability date

September 4, 2014

## Description

**IBM 240 GB, 480 GB, and 960 GB SATA 2.5-inch MLC and 3.5-inch MLC HS and G3HS Entry SSDs**

These new drives bring solid-state reliability and low-power capabilities to System x storage. These new options are available as single 2.5-inch and 3.5-inch SATA MLC drives.

## Product positioning

These high-performance SATA MLC Entry SSD options are positioned in the family of IBM SATA SSDs based on solid-state technology.

These SSD drives support entry-level server and workstation applications, such as:

- Transaction processing
- Data mining
- Data warehousing
- Professional video and graphics

## Product number

| Description | Machine Type | Model | Feature | SEO | Part Number |
|---|---|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 3331 | HC1 | AS0D | 00FN298 | 00FN298 |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 3331 | HC1 | AS0E | 00FN327 | 00FN327 |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 3331 | HC1 | AS0F | 00FN332 | 00FN332 |
| IBM 240GB SATA 2.5" MLC G3HS Entry SSD | 3331 | HC1 | AS0G | 00FN337 | 00FN337 |
| IBM 480GB SATA 2.5" MLC G3HS Entry SSD | 3331 | HC1 | AS0H | 00FN342 | 00FN342 |
| IBM 960GB SATA 2.5" MLC G3HS Entry SSD | 3331 | HC1 | AS0J | 00FN347 | 00FN347 |
| IBM 240GB SATA 3.5" MLC HS Entry SSD | 3331 | HC1 | AS0K | 00FN352 | 00FN352 |
| IBM 480GB SATA 3.5" MLC HS Entry SSD | 3331 | HC1 | AS0L | 00FN357 | 00FN357 |
| IBM 960GB SATA 3.5" MLC HS Entry SSD | 3331 | HC1 | AS0M | 00FN362 | 00FN362 |

The following are features already announced for the 2582, 2583, 3331, 3837, 5457, 5458, 5460, 5466, 7158, 7160, 7382, 7383, 7870, 7875, 7914, 7915, 8038, 8722, 8752 machine types:

| Description | MT | Model | Feature |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 2582 | AC1<br>MC1 | AS0D |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 2583 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 3331 | HC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 5457 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 5458 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 5460 | AC1<br>MC1 | |

| | | | |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 7160 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 7382 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 7383 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 7870 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 7875 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 7914 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 7915 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 8038 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 8722 | AC1<br>MC1 | |
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 8752 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 2582 | AC1<br>MC1 | AS0E |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 2583 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 3331 | HC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 5457 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 5458 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 5460 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 7160 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 7382 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 7383 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 7870 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 7875 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 7914 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 7915 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 8038 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 8722 | AC1<br>MC1 | |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 8752 | AC1<br>MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 2582 | AC1<br>MC1 | AS0F |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 2583 | AC1<br>MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 3331 | HC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 5457 | AC1<br>MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 5458 | AC1<br>MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 5460 | AC1<br>MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 7160 | AC1<br>MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 7382 | AC1<br>MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 7383 | AC1<br>MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 7870 | AC1<br>MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 7875 | AC1<br>MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 7914 | AC1<br>MC1 | |

| | | | |
|---|---|---|---|
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 7915 | AC1 | |
| | | MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 8038 | AC1 | |
| | | MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 8722 | AC1 | |
| | | MC1 | |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 8752 | AC1 | |
| | | MC1 | |
| IBM 240GB SATA 2.5" MLC G3HS Entry SSD | 3331 | HC1 | AS0G |
| IBM 240GB SATA 2.5" MLC G3HS Entry SSD | 3837 | AC1 | |
| | | AC2 | |
| | | AC3 | |
| | | AC4 | |
| | | AC5 | |
| | | AC6 | |
| | | AC7 | |
| | | MC1 | |
| | | MC2 | |
| IBM 480GB SATA 2.5" MLC G3HS Entry SSD | 3331 | HC1 | AS0H |
| IBM 480GB SATA 2.5" MLC G3HS Entry SSD | 3837 | AC1 | |
| | | AC2 | |
| | | AC3 | |
| | | AC4 | |
| | | AC5 | |
| | | AC6 | |
| | | AC7 | |
| | | MC1 | |
| | | MC2 | |
| IBM 960GB SATA 2.5" MLC G3HS Entry SSD | 3331 | HC1 | AS0J |
| IBM 960GB SATA 2.5" MLC G3HS Entry SSD | 3837 | AC1 | |
| | | AC2 | |
| | | AC3 | |
| | | AC4 | |
| | | AC5 | |
| | | AC6 | |
| | | AC7 | |
| | | MC1 | |
| | | MC2 | |
| IBM 240GB SATA 3.5" MLC HS Entry SSD | 3331 | HC1 | AS0K |
| IBM 240GB SATA 3.5" MLC HS Entry SSD | 5466 | AC1 | |
| | | MC1 | |
| IBM 240GB SATA 3.5" MLC HS Entry SSD | 7158 | AC1 | |
| | | MC1 | |
| IBM 480GB SATA 3.5" MLC HS Entry SSD | 3331 | HC1 | AS0L |
| IBM 480GB SATA 3.5" MLC HS Entry SSD | 5466 | AC1 | |
| | | MC1 | |
| IBM 480GB SATA 3.5" MLC HS Entry SSD | 7158 | AC1 | |
| | | MC1 | |
| IBM 960GB SATA 3.5" MLC HS Entry SSD | 3331 | HC1 | AS0M |
| IBM 960GB SATA 3.5" MLC HS Entry SSD | 5466 | AC1 | |
| | | MC1 | |
| IBM 960GB SATA 3.5" MLC HS Entry SSD | 7158 | AC1 | |
| | | MC1 | |

## Model conversions

None

## Feature conversions

None

## Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

https://www.ibm.com/partnerworld/mem/sla.jsp?num=114-135

## Publications

Publications are shipped with the announced products.

The IBM Systems Information Center provides you with a single information center where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access. The IBM Systems Information Center is at

http://publib14.boulder.ibm.com/infocenter/systems

### IBM Publications Center Portal

http://www.ibm.com/shop/publications/order

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. A large number of publications are available online in various file formats, which can currently be downloaded free of charge.

**Displayable softcopy publications:** None

**Source file publications:** None

## Services

### Global Technology Services®

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an on-demand business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

http://www.ibm.com/services/

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

http://www.ibm.com/services/continuity

For details on education offerings related to specific products, visit

http://www.ibm.com/services/learning/

Select your country, and then select the product as the category.

### System x and BladeCenter support services

#### *Recommended core technical support*

When you buy IBM System x technology, include the support services you need -- to help keep both your hardware and software working for you, day after day, at peak performance. It is your first step toward helping to protect your investment and sustain high levels of system availability. We offer service-level and response-

time options to fit your business needs. And we will help you get started with a core support package that includes:

- **Continuous system monitoring**

  Electronic monitoring that helps speed up problem-solving with automated, early detection of potential problems and system errors.

- **Hardware maintenance**

  World-class remote and on-site hardware problem determination and repair services.

- **Software technical support**

  Access to help line calls for fast, accurate answers to your questions during installation and throughout ongoing operations.

For more information, visit

http://www.ibm.com/servers/eserver/xseries/services.html

## Technical information

### Specified operating environment

***Physical specifications***

*IBM 240 GB, 480 GB, and 960 GB SATA 2.5-inch and 3.5-inch MLC Entry SSDs*

- Approximate height: 6.80 mm (0.27 in.)
- Approximate width: 69.85 mm (2.75 in.)
- Approximate depth: 100.20 mm (3.94 in.)
- Approximate weight:
  - 240 GB: 63.0 g (0.13 lb)
  - 480 GB: 63.0 g (0.13 lb)
  - 960 GB: 63.0 g (0.13 lb)

**Shipping dimensions**

- IBM 240 GB, 480 GB, and 960 GB SATA 2.5-inch MLC HS Entry SSDs
  - Height: 133.0 mm (5.24 in.)
  - Width: 63.0 mm (2.48 in.)
  - Depth: 174.0 mm (6.85 in.)
  - Weight: 423 g (0.93 lb)
- IBM 240 GB, 480 GB, and 960 GB SATA 3.5-inch MLC Entry SSDs
  - Height: 95.3 mm (3.75 in.)
  - Width: 194.0 mm (7.64 in.)
  - Depth: 257.0 mm (10.1 in.)
  - Weight: 304 g (0.67 lb)

**Agency approvals**

For IBM 2.5-inch and 3.5-inch SSDs

- UL
- CB
- VCCI
- CE Mark
- C-Tick Mark

- BSMI (Taiwan)
- KCC (Korea EMI)

### *Standards*

None

### *Operating environment*

*SSD*

- Temperature: 0°C to 70°C (32°F to 158°F)
- Relative humidity: 8% to 85% (noncondensing)
- Maximum altitude: 3,050 m (10,000 ft)

### *Homologation*

This product is not certified for direct connection by any means whatsoever to interfaces of public telecommunications networks. Certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

### *Hardware requirements*

These SDDs must be installed in selected System x or BladeCenter servers with SATA capability based on selected drives.

### *Software requirements*

The new IBM SATA SSDs work with most operating systems.

For further information, contact your IBM representative.

### *Compatibility*

- Support for popular network operating systems
- ServerProven® testing for servers
- Supported on System x servers

For latest compatibility information, visit

http://www-03.ibm.com/systems/info/x86servers/serverproven/compat/us/

**Note:** Some configurations may not be compatible.

### *Limitations*

Solid-state memory cells have an intrinsic, finite number of write cycles that each cell can incur. As a result, each solid-state drive has a maximum amount of writes to which it can be subjected, documented as Total Bytes Written (TBW) or Drive Writes per Day (DWPD). IBM is not responsible for replacement of hardware that has reached the maximum guaranteed number of write cycles. This limit may be revealed as the SSD drive failing to respond to system- generated commands or becoming incapable of being written to. In general, it is important to distinguish the difference in endurance for Entry drives, Enterprise Value drives, and Enterprise drives.

Enterprise drives have much higher write endurance and as a result can withstand a greater number of writes over the lifetime of the device compared to Enterprise Value or Entry drives. SSD write endurance is a important factor to consider because unlike spinning disk media, NAND flash has a finite number of program/erase cycles it will accept. SSD write endurance is typically measured by the number of program/erase cycles, or P/E cycles, each cell incurs over its lifetime, and per drive is listed as Total Bytes Written (TBW) in the drive specification. This statistic can be used to

give an estimate of the drive's remaining life based on the workload to which the drive will be subjected. The TBW value assigned to a solid-state drive is the total bytes of written data (based on number of P/E cycles) a drive can be guaranteed to complete. Reaching this limit does not cause the drive to immediately fail; it simply denotes the maximum number of writes that can be guaranteed.

A solid-state drive will not fail upon reaching the specified TBW. At some point based on manufacturing variance margin, after surpassing the TBW value, the drive will reach the end-of-life point, at which the drive will go into a read-only mode.

As a result of the technology limitations, care must be taken to use SSDs in environments that will not exceed the TBW of the drive prior to the required life expectancy of the application.

As an example, assume an access pattern of 50% random data and 50% sequential data with block size mixes of 5% of the data is 4k block size, 5% of the data is 8k block size, 10% of the data is 16k block size, 35% of the data is 64k block size, and 35% of the data is 128k block size. For a drive capable of 72 TB of lifetime writes, assuming an approximation of the workload stated above as being worst case, the drive workload must be limited to no more than 40 GB of writes per day to last five years and stay inside the 72 TBW limit. For the device to last threes years, the drive write workload must be limited to no more than 65 GB of writes per day.

Additional information is available at

http://www-03.ibm.com/systems/x/options/storage/solidstate/index.html

IBM's warranty for the device is limited to drives that have not reached the maximum guaranteed number of program/erase cycles, as stated below. A drive that reaches this limit may fail to operate according to its specifications.

Maximum warranted drive writes per drive is 0.38 Full Drive Writes per Day for 5 years or 165 TB TBW on the 240 GB SSD depending on workload and data patterns.

Maximum warranted drive writes per drive is 0.38 Full Drive Writes per Day for 5 years or 330TB TBW on the 480 GB SSD depending on workload and data patterns.

Maximum warranted drive writes per drive is 0.38 Full Drive Writes per Day for 5 years or 665 TB TBW on the 960 GB SSD depending on workload and data patterns.

### *User group requirements*

This announcement satisfies or partially satisfies the requirements from one or more of the worldwide user group communities. Groups include COMMON, COMMON Europe, Guide Share Europe (GSE), InterAction (Australia/New Zealand), Japan Guide Share (JGS), and SHARE Inc.

## Planning information

### *Customer responsibilities*

The new IBM SATA MLC Entry SSD products are designed as customer setup. Customer installation instructions can be found in the *Installation and User's Guide* for the system into which the drive is to be installed.

### *Cable orders*

None

### *Installability*

The IBM SATA SSDs require about 20 minutes for installation.

Installation includes unpacking, attaching a customer-provided line cord, setting up, and powering on.

***Packaging***

**IBM 240/480/960 GB 2.5-inch and 240/480/960 GB 3.5-inch MLC Enterprise Value SSDs**

| Product | Package description | Boxes |
|---|---|---|
| IBM 240 GB, 480 GB, and 960 GB 2.5-inch, and 3.5-inch SATA MLC Entry SSDs | Option Unit Box | 1 |

Contents:

SSDs
Important Notices and IBM Warranty Publication,
SSD Information Flyer

The IBM Entry SSDs are shipped as a single package. Other items are in zipped bags.

**Retail only**

*Packaging dimensions/weight*

- IBM 240 GB, 480 GB, 960 GB SATA 2.5-inch HS MLC SSDs:
  - Single box (LxWxD): 174.0 mm (6.90 in.) x 63.0 mm (2.48 in.) x 133.0 mm (5.24 in.)
  - Package weight: 423 g (0.93 lb) (may vary slightly based on SSD)
- IBM 240 GB, 480 GB, 960 GB SATA 3.5-inch HS Entry SSDs:
  - Single box (HxWxD): 95.30 mm (3.75 in.) x 194.0 mm (7.64 in.) x 257.0 mm (10.0 in.)
  - Package weight: 304 g (0.67 lb)

**Note:** All measurements are approximate.

### Security, auditability, and control

It is a customer's responsibility to ensure that the server is secure to prevent sensitive data from being removed.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

## IBM Electronic Services

Electronic Service Agent™ and the IBM Electronic Support web portal are dedicated to providing fast, exceptional support to IBM Systems customers. The IBM Electronic Service Agent tool is a no-additional-charge tool that proactively monitors and reports hardware events, such as system errors, performance issues, and inventory. The Electronic Service Agent tool can help you stay focused on your company's strategic business initiatives, save time, and spend less effort managing day-to-day IT maintenance issues. Servers enabled with this tool can be monitored remotely around the clock by IBM Support all at no additional cost to you.

Now integrated into the base operating system of AIX® 5.3, AIX 6.1, and AIX 7.1, Electronic Service Agent is designed to automatically and electronically report system failures and utilization issues to IBM, which can result in faster problem resolution and increased availability. System configuration and inventory information

collected by the Electronic Service Agent tool also can be viewed on the secure Electronic Support web portal, and used to improve problem determination and resolution by you and the IBM support team. To access the tool main menu, simply type "smitty esa_main", and select "Configure Electronic Service Agent." In addition, ESA now includes a powerful web user interface, giving the administrator easy access to status, tool settings, problem information, and filters. For more information and documentation on how to configure and use Electronic Service Agent, refer to

http://www.ibm.com/support/electronic

The IBM Electronic Support portal is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. This portal enables you to gain easier access to IBM resources for assistance in resolving technical problems. The My Systems and Premium Search functions make it even easier for Electronic Service Agent tool-enabled customers to track system inventory and find pertinent fixes.

## Benefits

***Increased uptime:*** The Electronic Service Agent tool is designed to enhance the Warranty or Maintenance Agreement by providing faster hardware error reporting and uploading system information to IBM Support. This can translate to less wasted time monitoring the "symptoms," diagnosing the error, and manually calling IBM Support to open a problem record. Its 24 x 7 monitoring and reporting mean no more dependence on human intervention or off-hours customer personnel when errors are encountered in the middle of the night.

***Security:*** The Electronic Service Agent tool is designed to be secure in monitoring, reporting, and storing the data at IBM. The Electronic Service Agent tool securely transmits either via the Internet (HTTPS or VPN) or modem, and can be configured to communicate securely through gateways to provide customers a single point of exit from their site. Communication is one way. Activating Electronic Service Agent does not enable IBM to call into a customer's system. System inventory information is stored in a secure database, which is protected behind IBM firewalls. It is viewable only by the customer and IBM. The customer's business applications or business data is never transmitted to IBM.

***More accurate reporting:*** Since system information and error logs are automatically uploaded to the IBM Support center in conjunction with the service request, customers are not required to find and send system information, decreasing the risk of misreported or misdiagnosed errors. Once inside IBM, problem error data is run through a data knowledge management system and knowledge articles are appended to the problem record.

***Customized support:*** Using the IBM ID entered during activation, customers can view system and support information in the "My Systems" and "Premium Search" sections of the Electronic Support website at

http://www.ibm.com/support/electronic

My Systems provides valuable reports of installed hardware and software using information collected from the systems by Electronic Service Agent. Reports are available for any system associated with the customer's IBM ID. Premium Search combines the function of search and the value of Electronic Service Agent information, providing advanced search of the technical support knowledgebase. Using Premium Search and the Electronic Service Agent information that has been collected from your system, customers are able to see search results that apply specifically to their systems.

For more information on how to utilize the power of IBM Electronic Services, contact your IBM Systems Services Representative, or visit

http://www.ibm.com/support/electronic

## Terms and conditions

### *MES discount applicable*

No

### *Field installable feature*

Yes

### *Warranty period*

One year limited warranty[1], or system warranty for SSDs.

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature that replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which it is installed.

[1] For information on the IBM Statement of Limited Warranty, visit

http://www.ibm.com/servers/support/machine_warranties/

Alternatively, this information is available through your IBM representative or reseller. Copies are available upon request. With respect to on-site service, IBM sends a technician after attempting to diagnose and resolve the problem remotely.

### *Customer setup*

Yes

### *Machine code*

No license terms apply.

### *Optional features warranty period*

Optional features - One year limited warranty[1].

Solid-state memory cells have an intrinsic, finite number of program/erase cycles that each cell can incur. As a result, each solid- state device has a maximum amount of program/erase cycles to which it can be subjected, documented as TBW (Total Bytes Written) or Drive Writes Per Day (DWPD). IBM's warranty for the device is limited to drives that have not reached the maximum guaranteed number of program/erase cycles. A drive that reaches this limit may fail to operate according to its specifications.

[1] For information on the IBM Statement of Limited Warranty, visit

http://www.ibm.com/servers/support/machine_warranties/

Alternatively, this information is available through your IBM representative or reseller. Copies are available upon request. With respect to on-site service, IBM sends a technician after attempting to diagnose and resolve the problem remotely.

## Prices

For current prices, contact IBM at 888-Shop-IBM (746-7426) or visit

http://www-03.ibm.com/systems/x/

To locate the web price, search on the feature number in the Search field.

| Description | Part number |
|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | 00FN298 |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | 00FN327 |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | 00FN332 |
| IBM 240GB SATA 2.5" MLC G3HS Entry SSD | 00FN337 |
| IBM 480GB SATA 2.5" MLC G3HS Entry SSD | 00FN342 |
| IBM 960GB SATA 2.5" MLC G3HS Entry SSD | 00FN347 |
| IBM 240GB SATA 3.5" MLC HS Entry SSD | 00FN352 |
| IBM 480GB SATA 3.5" MLC HS Entry SSD | 00FN357 |
| IBM 960GB SATA 3.5" MLC HS Entry SSD | 00FN362 |

| Field install only | Plant install only | MES removal | Cables required |
|---|---|---|---|
| N | N | N | N |

The following are features already announced for the 2582 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 2583 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 3331 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | HC1 | AS0D | MES |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | HC1 | AS0E | MES |

| | | | |
|---|---|---|---|
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | HC1 | AS0F | MES |
| IBM 240GB SATA 2.5" MLC G3HS Entry SSD | | | |
| | HC1 | AS0G | MES |
| IBM 480GB SATA 2.5" MLC G3HS Entry SSD | | | |
| | HC1 | AS0H | MES |
| IBM 960GB SATA 2.5" MLC G3HS Entry SSD | | | |
| | HC1 | AS0J | MES |
| IBM 240GB SATA 3.5" MLC HS Entry SSD | | | |
| | HC1 | AS0K | MES |
| IBM 480GB SATA 3.5" MLC HS Entry SSD | | | |
| | HC1 | AS0L | MES |
| IBM 960GB SATA 3.5" MLC HS Entry SSD | | | |
| | HC1 | AS0M | MES |

The following are features already announced for the 3837 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC G3HS Entry SSD | | | |
| | AC1 | AS0G | Initial |
| | AC2 | | Initial |
| | AC3 | | Initial |
| | AC4 | | Initial |
| | AC5 | | Initial |
| | AC6 | | Initial |
| | AC7 | | Initial |
| | MC1 | | Initial |
| | MC2 | | Initial |
| IBM 480GB SATA 2.5" MLC G3HS Entry SSD | | | |
| | AC1 | AS0H | Initial |
| | AC2 | | Initial |
| | AC3 | | Initial |
| | AC4 | | Initial |
| | AC5 | | Initial |
| | AC6 | | Initial |
| | AC7 | | Initial |
| | MC1 | | Initial |
| | MC2 | | Initial |
| IBM 960GB SATA 2.5" MLC G3HS Entry SSD | | | |
| | AC1 | AS0J | Initial |
| | AC2 | | Initial |
| | AC3 | | Initial |
| | AC4 | | Initial |
| | AC5 | | Initial |
| | AC6 | | Initial |
| | AC7 | | Initial |
| | MC1 | | Initial |
| | MC2 | | Initial |

The following are features already announced for the 5457 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 5458 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 5460 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 5466 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 3.5" MLC HS Entry SSD | | | |
| | AC1 | AS0K | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 3.5" MLC HS Entry SSD | | | |
| | AC1 | AS0L | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 3.5" MLC HS Entry SSD | | | |
| | AC1 | AS0M | Initial |
| | MC1 | | Initial |

The following are features already announced for the 7158 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 3.5" MLC HS Entry SSD | | | |
| | AC1 | AS0K | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 3.5" MLC HS Entry SSD | | | |
| | AC1 | AS0L | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 3.5" MLC HS Entry SSD | | | |
| | AC1 | AS0M | Initial |
| | MC1 | | Initial |

The following are features already announced for the 7160 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 7382 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 7383 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 7870 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 7875 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 7914 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 7915 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 8038 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 8722 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

The following are features already announced for the 8752 machine type:

| Description | Model Number | Feature Number | Initial/ MES/ Both/ Support |
|---|---|---|---|
| IBM 240GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0D | Initial |
| | MC1 | | Initial |
| IBM 480GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0E | Initial |
| | MC1 | | Initial |
| IBM 960GB SATA 2.5" MLC HS Entry SSD | | | |
| | AC1 | AS0F | Initial |
| | MC1 | | Initial |

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